

AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A reconfigurable apparatus with a high usage rate in hardware, comprising:

at least one reconfigurable unit having a plurality of at least 4-bit processing units elements (PEs) and a plurality of at least 4-bit switch boxes connected to the plurality of at least 4-bit processing units elements, the at least one reconfigurable unit receiving at least one configuration signal and dynamically ~~changing~~ combining at least two of the plurality of at least 4-bit processing units elements and at least one of the plurality of at least 4-bit switch boxes according to the at least one configuration signal[[,]] to thereby forming at least one form a functional unit selected from the group consisting of an adder, multiplier, or arithmetic logic unit (ALU)[[,]]

~~wherein the reconfigurable unit has at least one processing unit having different internal hardware components from other processing units in the reconfigurable unit.~~

2. (Canceled)

3. (Currently Amended) The reconfigurable apparatus as claimed in claim 1, wherein the switch boxes ~~comprise at least one interconnection~~ are used to deliver computed data among of the at least two processing units elements.

4. (Currently Amended) The reconfigurable apparatus as claimed in claim 3, wherein ~~the at least one each~~ switch box is a multiplexer or includes at least one data bus with or without a multiplexer.

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5. (Canceled)

6. (Canceled)

7. (Currently Amended) The reconfigurable apparatus as claimed in claim ~~5~~1, wherein a ~~plurality of various~~ functional units formed in a processor or system of the reconfigurable apparatus have internal hardware circuit blocks with the same hardware components that can be the logic blocks which are PEs.

8. (Currently Amended) The reconfigurable apparatus as claimed in claim ~~5~~1, wherein the PEs respectively have different computing functions.

9. (Original) The reconfigurable apparatus as claimed in claim 7, wherein the PEs respectively have different computing functions.

10. (Currently Amended) The reconfigurable apparatus as claimed in claim ~~5~~1, wherein some of the PEs have the same computing function.

11. (Previously Presented) The reconfigurable apparatus as claimed in claim 7, wherein some of the PEs have the same computing function.

12. (Original) The reconfigurable apparatus as claimed in claim 5, wherein at least one of the PEs has different computing function from other PEs.

13. (Original) The reconfigurable apparatus as claimed in claim 7, wherein at least one of the PEs has different computing function from other PEs.

14. (Original) The reconfigurable apparatus as claimed in claim 1, wherein the processing units are basic functional units.

15. (Currently Amended) The reconfigurable apparatus as claimed in claim ~~14~~ 7, further comprising at least one additional said functional unit, wherein ~~said internal hardware components are selected from one of arithmetic logic units, multipliers, multiplication and accumulation units, registers and memory~~ said functional units being different, and said functional units are further combined into a combined functional unit having additional functions.

16. (Currently Amended) The reconfigurable apparatus as claimed in claim ~~1~~ 15, wherein the switch boxes are used to connect the ~~internal hardware components of the~~ processing elements of said different ~~basic~~ functional units.

17. (Canceled)

18. (New) The reconfigurable apparatus as claimed in claim 1, wherein the reconfigurable unit is a homogeneous unit that has the same processing elements (PEs).

19. (New) The reconfigurable apparatus as claimed in claim 1, wherein the reconfigurable unit is a heterogenous unit that has different processing elements (PEs).

20. (New) The reconfigurable apparatus as claimed in claim 1, wherein the reconfigurable unit is a mixed homogeneous and heterogenous unit that a plurality of same processing elements (PEs) and at least one different processing element.